Filtroil INC.

On-line Oil Sampling

PODS

Portable Oil Diagnostic System

The heart of PODS is a new sensor for particle counting. Based on the concept of Light Extinction, it detects particles of >2µm (c) ISO-MTD (Medium Test Dust). The pressure of the hydraulic system moves the oil sample through the sensor during online operation. In bottle sampling mode, the necessary pressure to induce sample flow is produced by CO_2 stored in a small refillable pressure bottle (in the field) or compressed are (in the lab). Other sensors measure oil temperature and viscosity. The sample flow rate is measured and automatically regulated depending on oil viscosity. Each sample has one run for flushing (programmable) and three measurement runs of either 5, 10 or 20 mL. The analysis time depends on the oil viscosity and is as fast as 1 minute up to 2.5 minutes.

MEASURE THREE OIL PARAMETERS:

1. particle concentration (from which cleanliness classes based on several standards are derived)
2. oil temperature
3. oil viscosity

THREE OPERATING MODULES:

1. analysis from bottle samples
2. online measurement at the pressure of the hydraulic system up to 420 bar or 6000 psi
3. online measurements in with ecoline ump 045 by argo ecotec e.g. during filling or off-line filtration of a hydraulic system for stationary or mobile hydraulic equipment

SPECIFICATIONS FOR PORTABLE OIL DIAGNOSTIC SYSTEM

TECHNICAL INFORMATION

detection method	Light Extinction
sensor performance	Meets Japanese Industry Standard (JIS 9925 B: 1997) 4-100 µm (c) (ISO-MTD); ~1-100 µm (ACFTD)
size range	8 channels at any size between 4-64 µm (c) present:
size channels	ISO-MTD sizes [µm (c)]: ACFTD sizes [µm] Sizes used for classification according to ISO
flow rate	15-50 mL/min. (automatic or by users choice)
calibrations	ISO-MTD in oil (ISO 11171:2000)
cleanliness classifications	ISO 4406; NAS 1638; MIL-STD-1246C; NAVAIR 01-1A-17
cleanliness class range	ISO 4406 Code 1 up to 24
concentration limit	90,000 Particles/ml @ 10% optical coincidence
results measured	Cleanliness class (according to standard), Concentration (Particles/ml), Temperature (ºF or ºC), Viscosity (mm_/s, cSt, SUS)
light source	Laser diode
counting efficiency	Meets JIS 9925 B: 1997
counting accuracy	Counting accuracy traceable to microscopic counting
wetted materials	Stainless steel, sapphire, aluminum, Aflas, PTFE
fluid pressure	90-6000 psi (0.5-420 bar)
temperature	32-194 ºF (0-90ºC) oil @ 77º F (25º C) ambient 32-122 ºF (0-50ºC) ambient 32-104 ºF (0-40ºC) internal
relative humidity	20-85% operational, non-condensing Up to 98% storage
viscosity	5-500 mm^2/s for viscosity measurement and particle counting; 1-850 mm^2/s for particle counting only

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SPECIFICATIONS FOR PORTABLE OIL DIAGNOSTIC SYSTEM

TECHNICAL INFORMATION, cont'd.

fluid compatibility	Mineral oils and phosphoric ester (For biodegradable pressure fluids please ask us!)
pressure medium	Liquid CO_2 (1 bottle for approx. 60 oil samples) or compressed air
oil sample bottles	100 mL.
features	Cast aluminum housing Carry handle and shoulder strap Universal power adapter/charger (90-240 VAC) Internal thermal line printer LCD display and keypad Memory capacity for 500 samples RS232C communication port Quick connect for shop air (clean, dry) 90-110 psi (4-7 bar) Exchangeable CO_2-bottle, refillable, filled with 100g CO_2 NiMH battery microprocessor controlled recharging for extended battery lifetime, about 4h permanent working time Digital output 0-5 Vdc/<20mA no load; analog input 0-5 Vdc Online adapter with Minimess fitting M 16X2
operating modes	Bottle sampling (90-110 psi or 4-7 bar); Online sampling (7-6000 psi or 0,5-420 bar) Monitoring of ECOLINE UMP 045 by ARGO ECOTEC
software	PODSWare for download, storage and management of PODS data under Windows® 95 or higher.
weight	25 lbs. (11.5 kg)
measurements	11.8" W x 13.8" L x7.9" D (300 x 350 x 200 mm)

FLUID CONTROLLING CONCEPT

PODS is the key element to Fluid Controlling. Regular measurement of the oil condition of mobile and stationary hydraulic systems can be quickly conducted by the user at any time. The comparison of the results with preset oil quality and cleanliness guidelines will trigger oil service measures tailored to the needs of the system. The exchange of filter elements, the replacement of the oil or the cleaning and drying of the pressure fluid is now determined when accepted limit values are surpassed. Machine operating times are prolonged and the oil change intervals are extended, saving costs in maintenance and repair.

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